WHAT IS CLAIMED IS:

1. A method of constructing a halftone screen comprising:

defining a halftone screen frequency and screen angle according to a predetermined requirement;

defining a desired subcell having the predetermined frequency and screen angle requirement, wherein the subcell is substantially specified by two spatial vectors $\mathbf{v}_1 = (x_1, y_1)$ and $\mathbf{v}_2 = (x_2, y_2)$, wherein x_1, x_2, y_1, and y_2 are real numbers;

forming a supercell comprising an array of the subcells, wherein the supercell is substantially specified by two spatial vectors $\mathbf{u}_1$ and $\mathbf{u}_2$ and wherein the relationship between the supercell and the subcell satisfies:

$k_1\mathbf{v}_1 + k_2\mathbf{v}_2 = \mathbf{u}_1$, and

$k_3\mathbf{v}_1 + k_4\mathbf{v}_2 = \mathbf{u}_2$, where k_1, k_2, k_3 and k_4 are integer values.

2. The method of claim 1, further comprising:

using particular integer values for k_1, k_2, k_3 and k_4 and $\mathbf{u}'_1(m_1, n_1)$ and $\mathbf{u}'_2(m_2, n_2)$, where m_1, n_1, m_2 and n_2 are integers to solve the supercell-subcell relationship for $\mathbf{v}_1'$ and $\mathbf{v}_2'$, where $\mathbf{v}'_1$ and $\mathbf{v}'_2$ are approximate solutions of the desired subcell $\mathbf{v}_1$ and $\mathbf{v}_2$; and

comparing $\mathbf{v}_1$ and $\mathbf{v}_2$ with $\mathbf{v}_1'$ and $\mathbf{v}_2'$.

3. The method of claim 1, wherein the step of solving the supercell-subcell relationship comprises directly searching for solutions.

4. The method of claim 1, wherein a plurality of supercell solutions are determined and further comprising:

applying a constraint to the determined solutions; and

removing supercell solutions that do not satisfy the constraints.

5. The method of claim 4, further comprising selecting a supercell solution that satisfies the constraint and creating a halftone screen using the selected supercell.

6. A method of constructing a halftone screen comprising:

selecting a frequency and screen angle of interest;

identifying a subcell by spatial vectors which satisfies the selected frequency and screen angle of interest;

forming a supercell comprising an array of the subcells, wherein an integer relationship exists between the supercell and the subcells;

solving the integer relationship;

testing one of any resulting solutions according to any additional constraints or tolerances; and

if any of the resulting solutions satisfies the testing, creating a halftone screen using the tested solution.